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ABSTRACT

The Brazilian National Plan for Graduate Studies aims at achieving a combination of training activities at the graduate level to be developed at the various institutions of higher education and research. The current situation is reviewed in terms of stabilization, performance, and development problems. Objectives and general directives include: (1) institutionalization of the graduate studies system, such as guidelines for institutional consolidation and for financial stability; (2) raising the standards of performance, such as admission requirements, scholarship grants, faculty selection and workload, faculty upgrading, exchange programs, university administration, allocation of resources, consultant services, information systems, and planning for growth. Further consideration is given to programs and goals for expansion, including alternatives and financial resources. (LBH)

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National Council for Graduate Studies

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National Plan For Graduate Studies

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PRESIDENT OF THE FEDERAL REPUBLIC OF BRAZIL
Ernesto Geisel

MINISTER OF EDUCATION AND CULTURE
Ney Braga

MINISTRY OF EDUCATION AND CULTURE
National Council for Graduate Studies

National Plan For Graduate Studies

Brasilia, Federal District, 1976

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INTRODUCTION

This document, The National Plan for Graduate Studies (PNPg) is an expression of the work of the National Council of Graduate Studies. It was created within the Ministry of Education and Culture by the Federal Government Decree no. 73,411, of January 4, 1974. Both the establishment of the Council as well as the preparation of the Plan result from recommendations presented in the report of the Task Group of the Secretariat General of the Ministry of Education and Culture. It was formed during 1973 to make the necessary initial proposals for the definition of a Graduate Studies policy.

The purpose of this Plan is to achieve a combination of training activities at the graduate level to be developed at the Institutions of Higher Education and Research. This educational and scientific work is distributed among several types of courses, as indicated in the official document no. 977/65 of the Federal Council of Education. In the strict sense these are Masters and Ph.D. – level courses, and in the broad sense, advanced training courses at a level of specialization and upgrading.

The Educational and the Scientific Policies are represented, in the Second National Development Plan (II PND), through the Divisional Plan for Education and Culture (PSEC) and through the Basic Plan for Technological and Scientific Development (PBDCT).

The PNPg is integrated with both of these from both strategic and operational viewpoints. As a result, the Human Resource Programs at the university level should be implemented according to the concepts and guidelines of planning herein expressed, with the intent to guide Graduate Study activities on the national level.

The series of analyses and strategies presented herein will serve as a reference for the measures to be taken at all institutional levels of coordination, planning, execution and adjustment of Graduate Study activities during 5 years, starting in 1975. Its implementation will take place through the participation and committment of the Ministry of Education and Culture, other governamental agencies dealing in the areas of Human Resources, Science and Technology,and the Institutions of Higher Education and Research, both public and private. With such a policy, a new era will arise within the university system, during which Graduate Study activities will assume an important and strategic role.

To attain this goal, the National Graduate Studies System must be consolidated within an institutional and financial framework to raise its performance level and have its expansion guided in order to perform its functions with greater efficiency. The foreseen and desired result of these strategies is the dynamization of activities on a national level with the permanent and regular ofering of Graduate Studies in Institutiôns of Higher Education.

Upon approving and recommending this Plan, the National Graduate Studies Council clarifies some working hypotheses which are essential for formulation and understanding of the policy described in this document:

– Teaching and research must be integrated on all levels, and the various levels must be connected among themselves.

– Higher Education is a sector for training Human Resources for all the other levels of teaching and for society; the Graduate Courses in the strict sense – Masters and Ph.D. programs – must be regularly directed toward the training of Human Resources for higher education itself.

– The training of faculties for Brazilian Institutions must be programmed so as to take into consideration the possibility of meeting the demands through courses located here; in specific cases where it is impossible to do so with national talent, exchange agreements with foreign institutions must be worked out.

This document initially presents an overview of the evolution of Graduate Studies in Brazil pointing to its principal current problems. Taking this brief diagnosis as a basis, some essential guidelines were established for its progressive solution , starting in 1975. And, in the last chapter the principal goals are indicated for expansion of the Graduate Studies System during the five year period 1975–1979, showing the great amount of financial resources necessary for its implementation.

Finally, this planning is of an expository nature, a decision made with the conviction that the alternatives of implementation and reformulation will be studied, discussed and reformulated, based upon these guidelines, and in accordance with the organization of the institutions, their present needs and the National goals.

2. ANALYSIS OF THE DEVELOPMENT OF GRADUATE STUDIES

This item presents the principal measurable aspects of the Graduate Education activities, whose breakdown into sectors and regions will be presented in chapter 4; it analises the process of growth of the courses and institutions, and the principal current problems of Graduate Studies.

2.1 – Scope of Activities

Because only very recently graduate courses have been created in Brazil, statistics concerning the scope of those courses are not reliable. The figures herein shown are estimates based on samples which were chosen on the basis of ad loc classification and aggregation criteria.

There are nearly 50 institutions of higher education where Graduate Studies are in operation, with the following division: 25 are Federal, 10 are State and Municipal and 15 are Private. In these Institutions we presently find 158 areas of concentration in Master's Programs and 89 areas of concentration in Ph.D. programs, all approved by the Federal Council of Education; there are 195 schools with Master's Courses and 68 with Ph.D. Courses. These are accredited by the National Research Council as Centers of Excellence.

In 1973, approximately 7,500 openings were filled in these courses, with a total in all phases of about 5,000 students, with the following distribution: 5,000 students were at Federal Institutions, 5,800 attended State and Municipal Colleges and 2,700 were in Private Schools. During the same period, 7,500 professors were involved in Graduate Study activities, 50% with Ph.D. degrees, 20% with Master's degrees, 12% full professors and associate professors and 18% without graduate degrees. The system conferred as of [illegible] nearly 3,500 masters degrees and 500 Ph.D. degrees, 50% of them being absorbed by the academic profession and the remaining 50% by the professional work force.

2.2 – Growth Process

The most obvious aspects of this developmental process are: the isolation and separation of initiatives; the insufficient support and orientation by the agencies responsible for the educational policy; and in the majority of cases, a great diversification of sources and means of financing.

It is true that in one way or another, Graduate Studies have reached considerable dimensions and have contributed effectively to the formation of qualified human resources. However, up to the present time, the process of growing reveals a profound institutional weakness, which hampers the performance of the courses and research under way.

Only in some cases were the Master's and Ph.D. courses initiated and maintained as regular and permanent activities at the universities. Frequently, the initiatives were taken by groups of professors and researchers who, due to political-administrative difficulties within their departaments and divisions, have worked without the desirable articulation with the Institutions. In order to implement the courses, outside funds from different sources and tied to diversified purposes and deadlines have been utilized together with the university budget. The utilization of heterogeneous and inconsistent resources by relatively isolated groups has resulted, in many cases, in the use of self-administrative procedures,

which, when added to the deficiencies and problems of the universities, have produced several areas of institutional conflict, and inefficiency.

Many highly praiseworthy initiatives have managed, with the financial support of different governmental agencies, to implement Graduate Study activities in Brazil, enabling this Plan to find considerable potential for educational and scientific work in many areas of knowledge. On the other hand many courses are in a very poor state. Efforts put forth up to now have been made primarily to overcome the immediate needs and problems. The possible long range strategies are hampered and lack the necessary conditions for implementation while these problems remain.

These things happened within the university setting but can only be understood as resulting from the whole socio-economic process of present day Brazilian society.

The changes occurring in our country in the last few decades, especially the industrialization and urbanization processes, are deeply linked to technical innovation and to the rational division of work. In order to attain higher organizational and productivity levels, new professions and specialities have been required in number, program and regional diversification always greater. The entire educational structure is then submitted to a pressure to educate at all levels and to serve an increasing population. Especially in higher education, the traditional pattern of the Institutions presents a slow and inadequate answer to these needs.

On the other hand, the social and technical problems of a society, where several developmental stages and consequently several distortions and bottlenecks exist together, need projects and plans to direct solutions. This in its turn, stimulates the utilization of technology and of new and more efficient political-administrative methods. This has been partially supplied with the importation of knowledge and services, but at the same time, it stimulates our own consistent scientific production. The universities and the research centers might have accepted these challenges had there been more than the few existing nuclei of scientific production and had those not been isolated among themselves, with little resources and without outlined programs.

Therefore, two types of strong demand were made on those Institutions during this period:

1. To train in great number and diversity, researchers, faculty and professionals.

2. To submit and carry out research projects, rendering advisory services to the production system and to the government.

Due to these lines of action, the way in which higher education developed has depended upon the definition of an educational and scientific policy, especially sharing activities and responsibilities among the various governmental agencies on the federal level. It was the responsibility of the Ministry of Education and Culture as principal financial sponsor, to train personnel to meet the first demand with sufficient ability and speed so as to supply the necessary work forces, renovate and enlarge the university faculties and meet the needs of the research centers. For the fulfillment of the latter demand, the responsibility of this Ministry should be shared with several other governmental agencies, which are also charged with financing, supporting and stimulating research.

In this framework, the condition to promote an autonomous research process would be to train human resources to make up the initial nuclei of researchers and enlarge little

by little the few already in operation. The lack of foresight and the shortage of resources in the educational sector has led other financing agencies to also train personnel, thusly enlarging their role in the educational process. In an important way the National Bank for Economic Development (BNDE), the National Research Council (CNPq), and the Financing Agency for Studies and Projects (FINEP) have participated in this process and are still financing many Master's and Ph.D. courses.

Parallel to this, specific sectorial and regional needs were being met by an institutional plan which was outside the university system. Several other entities and agencies set up training courses for select professional specialities, giving them a Graduate Study structure. Thus, in order to meet the needs of the work force, universities and isolated teaching institutions made agreements with those who were interested and implemented courses to train the required professionals.

2.3 – Analysis of the Current Situation

Graduate Studies have made an unquestionable contribution toward the improvement of the university teaching staff and in meeting the present needs of the work force. Nevertheless, the lack of guidelines from the Ministry of Education and Culture and the diversity of criteria for implementation have caused several bottlenecks, as summarized below:

a) Stabilization Problems

A great number of courses are not permanent, neither from the institutional viewpoint nor the administrative and financial. Their continuity is jeopardized by the lack of guarantees, by the weakness of ties among the courses and their institutions and by the possibility of reduction in or loss of funding. The disturbances which result from this situation reach a considerable depth, the more evident being: the false expectations generated in the students and candidates for Graduate Studies; the interruption of projects and instructional activities; professional and job instability of teachers, technicians and administrative personnel; and the impossibility of long range commitments.

b) Performance Problems

The Master's and Ph.D. courses under way, as a whole show little efficiency. Some approximate indicators of their overall performance show that the majority of candidates enrolled do not even complete their credits and especially in the Master's programs only about 15% receive their diplomas. The shortest time for obtaining these degrees has been on the average of 2 and a half years for the Masters and more than 4 years for Ph.D. These figures are high when compared with international standards and with the country's present needs and possibilities. Among a series of other factors which contribute to the situation are the small proportion of full time participants with scholarships, only about 40%. This plus a very high mortality rate, linked to the needs of the work force, which has not been adequately served by the courses of Specialization and Upgrading, unduly overload the Master's and Ph.D. courses.

c) Development Problems

Many courses in some areas and programs have grown, under the pressure of candidates, in greater number than existing vacancies. This expansion has produced a strangulating effect in certain programs, which, in spite of being essential and strategic, are still restrained from exercising their multiplier effect toward improving the performance of the entire university system. On the other hand, due to the occurence of a substantiated geographic concentration, an undesirable trend has developed among university graduates, namely that of migrating from the interior to the areas of large capital cities, and this without the necessary return of personnel to their places of origin. Consequently, the expansion problems of the Graduate Studies system has worsened since the opening of new courses, the increase of existing ones, and meeting the demand on a national range depend in a great deal upon the fixation of human resources in all basic sectors of scientific work and in the various geographic-educational regions.

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3. OBJECTIVES AND GENERAL DIRECTIVES

Among the general functions of the Brazilian University System the goals of Graduate Studies are the following:

– To train professors for university teaching in order to meet the quantitative expansion of learning and to promote its quality.

– To train researchers for scientific work directed toward creating nuclei and centers which will meet the program and regional needs of society.

– To prepare high level professionals, according to the demand of the labor market for private and public institutions.

The main objective of the National Plan for Graduate Studies is to transform the universities into real centers of permanent creative activities. This will be reached to the degree that the System of Graduate Studies exercises, with efficiency, these formative activities and carries out a constant study and analysis in all fields and areas of human knowledge and the Brazilian culture.

Thus, the University System as a whole, must:

– Difuse and amplify the knowledge and the culture of society.

– Utilize the resources and instruments of teaching and research for a real change of the material and cultural conditions of society geared toward its social and economic development.

– Prepare, train and qualify human resources on a high level, both in volume and diversity and adequate for a productive national system and the university's own educational system.

The guidelines that will direct the action of the agencies charged with implementing the Graduate Studies policy are based on the diagnosis previously summarized in this Plan. They offer resources for correcting the distortions which occur. Considering Graduate Studies as a component of the ordinary university program, the National Plan for Graduate Studies must be understood as a guideline for the initiatives and the efforts toward the total achievement of the above mentioned functions.

The following guidelines are considered feasible and essential:

1st – Institutionalize the graduate system, consolidating it as a regular activity in the university program and assuring it stable financing. (Item 3.1 of this Plan).

2nd – Raise the present performance standards and justify the use of resources, increasing the output and the productivity of the work processes, assuring the best possible quality for the courses. (Item 3.2 of this Plan).

3rd – Plan its expansion with the objective of a more balanced structure among the areas of educational and scientific work and among the regions of the country, minimizing the pressure now suffered by this part of the university system and increasing the efficiency of investments and broadening the cultural and scientific patrimony. (Item 3.3 of this Plan).

These guidelines are specified below initially through a conceptualization and later through the principal means according to the institutional level where they are performed. It is important to point out the steps to be implemented during the five (5)

years period and the strategies of implementation that should flow from this Plan, considering the participation of the institutions themselves, that will try to adapt these guidelines to their specific conditions and problems.

3.1 – Institutionalization of the Graduate Studies System

This item presents the principal guidelines for the institutionalization of all present and future activities. It starts with an institutional concept of these activities and then proposes it's administrative and financial compatibility. The guidelines will refer to institutional measures of both a national scope and at the university level.

The more general orientation in this article is to consolidate the system by proposing a more adequate division of the functions of the government agencies involved. Thus, the normative functions and the financial arrangements related to the usual activities of the Masters and Doctoral courses must pass through the Ministry of Education and Culture, while the remaining departments and agencies will participate with supporting programs and research projects.

3.1.1 – Concept of Graduate System

Within the university complex, Graduate Studies involves a system of teaching which encompasses the format of the Masters and Doctorate degrees (Graduate Studies in a strict sense), in accordance with the laws of the Federal Education Council and the legislation in force.

The courses for the degree form graduate professionals, granting the Diploma of Master and/or Doctor upon termination of a teaching assignment and research project, governed by specific regulations. The other kinds of courses also train graduate professionals, but through academic processes of a more restricted nature and time schedule.

The Graduate Study System comprises:

– The National Council of Graduate Studies, as a collegiate inter-ministerial entity, responsible for the formulation of the general Graduate Studies policy and the coordination of it's execution.

– The Federal Council of Education, as an agency of the Ministry of Education and Culture, responsible for regulating the general legal procedures and accreditation of courses.

– The Department for University Affairs (DAU), as an agency of the Ministry of Education and Culture, responsible for carrying out the policies and programs.

– The National Council for Scientific and Technological Development – CNDCT – as an agency of the Secretariat of Planning of the Presidency of the Republic, responsible for rendering advisory services in the formulation of the scientific and technological development policy and for coordinating and supporting the scientific production activities.

Other departaments and agencies, government or not, with supportive and motivating roles in research activities and the training of human resources.

Institutions of higher learning and research centers, both public and private ones,

who have Graduate Studies courses, which are directly related to the operation of the courses.

Within this concept, the system comprises several institutional levels of coordination, planning and execution, which would be geared toward a clearer definition of functions and responsibilities with a view to the administrative and financial compatibility which characterizes an institutionally stable system.

3.1.2 – Guidelines for Institutional Consolidation

The current activities in almost the entire system are rigid and possess diverse criteria of administrative dependence, autonomy, budgetary ties, work loads, representation and decision-making. These definitions and institutional overlapping were typical of the initial phases of implementation and development of the system and must be overcome in this stage to the degree that the consolidation now intended, logically follows the initial pioneering.

From this point of view, the tendencies observed in the former period of isolating the Graduate Studies from the other university activities cannot be justified. The argument that the administrative flexibility, recognized as necessary for the Masters and Doctoral courses, demands autonomy in relation to the institution not consistent, due to the historical experience already described.

The institutional consolidation and the financial stabilization are interdependent and of a general strategic nature and their instrumentation is suggested in article 3.1.4 For Graduate Studies to be consolidated in institutions of higher learning, a political administrative effort becomes necessary, finding ways to:

– Overcome the instabilities through broader commitments among the various units and entities involved in problematic areas and situations.

– Minimize the professional and institutional inefficiency which is harmful to team work and to the coordination of activities, revising the plans for discussion, delegation, decision-making and representation.

– Assure success in the implementation of new courses, supporting the improvement of the departmental structure, foreseeing their future needs and putting into action the mechanisms and resources of the Departaments to intervein the future, lessening the degree of uncertainty and improvisation of it's political-administrative measures.

The success of these strategies might avoid the repetition of situations similar to the previous and the present ones such as:

– The appearance of a "private" teaching faculty which results in the formation of a teaching elite, existing only in function of the subject taught.

– The existence of an independent administration and the adoption of academic norms which are incompatible with those used in other sectors of the institutions.

– The duplication of means with the same goals.

– The distance between Undergraduate and Graduate Studies.

These strategies must have support and orientation at the governmental level, because consolidation is necessary and convenient also at this level in order for the more general policies to be implemented.

3.1.3 – Guidelines for Financial Stability

The present financial support of the Graduate Studies courses will be disbursed in different proportions through contracts, programs, projects and budgetary grants. The resources, which are of a diversified nature and ties, will be utilized in a financial-economic system distinct from the other university activities in an important aspect: the costs for Graduate Studies, usually higher than the Undergraduate ones are increased by operational deficiencies typical of a structure not consolidated. Keeping this in mind, financial stabilization is considered basic to these disbursements, giving them a regular and programmed form within the total picture of resource allocation at a governmental, ministerial and university level.

All the other directives will be endangered in their implementation if a significant level of financial stabilization is not attained in a short time. This process will follow these guidelines:

a) At the Federal Government Level – The Government's resources must continue to complement the university's, whether public or private, in the installation of courses, in the maintenance of scholarships at various levels and in financing projects and research; on the other hand, they must progressively withdraw from other activities.

b) At the Ministry of Education and Culture Level – This Ministry must gradually absorb the activities at Federal Institutions with investments in the physical plant, personnel and other expenses, including the grants and scholarships necessary for the programs of training faculty. Besides this, it should support the initiatives for Graduate Studies in the entire system of higher education.

3.1.4 – Measures and Orientation at the University Level

The two previous guidelines – institutional consolidation and financial stability – must lead to a process, political-administrative in nature, within the institution's environment, once they imply changes and new guidelines for present procedures. In many cases, neither the Graduate Study courses, nor the departments find themselves in conditions to consolidate and stabilize their activities in a coherent and consonant manner based on similar criteria.

Some general guidelines are indicated herein for a harmonious solution to this process:

– Adjust the present Graduate Studies procedures to a functional and hierarchical structure already accepted, updated and operating within Brazilian higher education, according to the University Reform, without forcing a break in the common expectations of students, faculty members and administrators.

– Make a considerable effort for the improvement of criteria and financial administrative methods of the institutions, in order to achieve a higher flexibility in the manipulation of resources and people.

– Promote the necessary changes to adjust the financing of the system, being careful to avoid quick and disorganized changes which can cause an unbalance, requiring solutions with resources from outside the budget. In this transaction it must be taken into consideration that resources of this type are very instable and not to be counted on for achieving essential items.

– Foresee the future needs for growth and diversification and the possibility of meeting these at the Graduate Studies level; with these in mind, to ensure regular implementation of programs to train the necessary human resources both at medium and long range duration.

– Promote the effective participation of the entire university in it's Undergraduate, Graduate and Research activities, establishing the general rule that all qualified faculty for Graduate Studies also participate in Undergraduate teaching; and that Graduate students whenever possible and convenient support these tasks as class monitors, and teaching assistants, officially selected, and having the right to a teaching fellowship grant.

– Consciously utilize the designated time for planning in order to attain institutional consolidation and financial stabilization in an integrated form in the entire institution. In the majority of cases, Graduate Studies is small if compared with the Undergraduate program and this integration can be achieved more rapidly where it is larger. The five year period should be long enough for a progressive integration, coordinated and controlled by the university institution.

Besides these general guidelines it is necessary that the universities, considering current problems, take the following specific steps:

– The allocation of personnel and resources to the Departments, both for Undergraduate and Graduate Studies, and their own Masters and Doctoral courses as well as for interdepartmental courses; the maintenance of a teaching staff, technicians and administrative personnel, which must remain under the regular budget of the institution, without damage to eventual supplementary aid, derived from financing specific projects.

– The promotion of regular activities of joint coordination and representation for the Undergraduate and Graduate Studies activities on the departmental and interdepartmental level, according to the areas of interest and the curricular, thematic and professional affinities.

– The implementation of central agencies, already foreseen by the Federal Council of Education and by the University Reform to coordinate the Graduate Study activities at a Vice-Presidency level as well as of councils for the internal normative instrumentation to the university.

3.2 – Raising the Standards of Performance

This item presents the main guidelines for increasing the Performance-Level Standards beginning with a conceptualization of Graduate activities as a work system. After that, several steps are suggested to be taken at the course level, at the university level and at the national level.

Establishing the quality of the Performance-Level Standards as one of the three basic guidelines of this Plan, the National Council for Graduate Studies considers that this improvement in quality is essential because, whatever the measures and indicators utilized to represent the performance of the courses, their overall level is low. This situation tends to endanger the efficiency of any option for growth which may be adopted and which must be overcome in a consistent, progressive and conscious way on all levels where the measures are proposed.

3.2.1 – Graduate Teaching as a Work System

The raising of the performance level for Graduate Studies is understood here as a series of changes in the conditions of work and in the organization of educational activities and scientific production. In order to make this become a fact, it is important that these conditions and this organization be analysed and developed, starting from a conceptual view of Graduate Teaching as a work system.

A Graduate Studies course mobilizes human resources and material in accordance with work processes of an educational and scientific nature. Besides the institutional aspects described and analysed in other parts of this document, it is important here to point out the operational mechanism of a course:

– The scientific activities comprise the organization of regular lines of research projects, the production of professional works on communication, discussion and exchange of information, and cultural, scientific and technical themes; these are carried out by groups, in the majority of the cases, from different areas of scientific work and often with the participation of different institutions.

– The professional activities comprise, also in groups and with the participation of several institutions, the preparation and execution of technical and organizational projects formed specifically to render advisory services in order to develop a productive system and formulate plans and government policies.

Thus, the performance level of a course are understood as logical and accountable relations among the aspects, values and time span of resources and activities involved. And the quality increase of these patterns will be made through measures which modify the nature of these types of work.

3.2.2 – Guidelines for Performance at Course Level

Guidelines and steps are proposed that in the majority of cases must be implemented at course level and also in the department to which they are attached. These measures are divided into four groups according to functions and areas of activity:

a) Admission requirements and selection process

b) Work load and scholarship grants to students

c) Educational process and scientific production

d) Work load and selection of teaching faculty

Other measures of a broader nature, and supportive of these are proposed in the following items (3.2.3 and 3.2.4).

Initially, the importance of each group of functions is explained, followed by proposed steps, presented in some detail. However, an effort was made to maintain the necessary amplitude for the tactical steps in each course and in each institution, depending upon the conditions and the participation of people involved:

a) Admission Requirements and Selection Process

The knowledge, the aptitudes and the objectives of these candidates comprise a significant part of the system, once the resources are mobilized to act on these

characteristics. The candidates come from two previous situations: the majority (presently about 70%) comes directly from the Undergraduate level, the others are faculty members or professionals who graduated some time ago. The Graduate Study courses themselves will find it difficult to directly change the admission requirements of their candidates and experience shows that the level of admission has to be practically taken as presented.

Because of this, the ideal selection process should take into consideration: the aptitudes, which depend upon cultural and personal characteristics; previous knowledge acquired on the graduate level and in professional work experience; the objectives of the candidates in terms of professional accomplishment and research work.

Besides this, the Plan suggests some preventive measures of a general nature to improve the efficiency of selection:

– The Masters and Doctoral courses must get better information on the related undergraduate courses and on the candidates' potential in order to better plan the selection process and its work with each group.

– The procedures of public relations, personal contact, interviews, admission and enrollment must be improved in order to administer a more careful treatment of candidates and students, enlarging their alternatives of professional choice and trying to attract the more capable and interested students.

– The institution which offers the Masters and Doctoral courses must present, during the time of personal contact with the candidates the information about their curriculum and the research projects both under way and in the planning phase; with this it is possible to work up, together with the candidates, work plans which form a reciprocal, flexible, and responsible commitment.

These measures do not attempt to create uniform procedures, but call attention to the strategic aspect of selection. It is through this process that a course fulfills its level of expectation, and with competent and interested people.

Some procedures are presently being used to meet the excessive pressures of demand, programmed and regional bottlenecks and deficiencies of the under Graduate courses. All these problems can only be overcome with broader strategic measures for growth, as those indicated in item 3.3 of this Plan. But, as the effects of a more oriented expansion are effected, some present activities for recruitment and selection must be reconsidered and in this case the so called "leveling" or "remedial" courses should have a more individual nature, both for selection as well as for updating.

b) Work Load and Scholarship Grants to Students

The academic performance of students, given the present admission and selection situation, will be well established by the characteristics of their work load and the mechanisms for granting scholarships. As the Graduate students are trained as professionals, they always have the alternative of choosing between continuing their studies and entering the work force. This being the case, the alternatives of a Masters and Doctoral degree must offer better working conditions and scholarships grants which permit guaranteed maintenance and at a satisfactory level.

Thus it is important that:

– The majority of students in each course work full time with scholarships, having

their work load conveniently divided among hours for study, research activities and teaching activities;

– The criteria to measure output, promotion and issuance of degrees, take into consideration their entire academic performance, measuring it cumulatively, starting from an ample group of activities;

– Physical facilities and adequate environmental conditions for the teaching activities and the other works carried out by students at the institutions be made available;

– During all the phases of the course, individual academic advisors be appointed to follow closely the work of each student, and the various advisors be coordinated at the course and departmental levels for a more efficient performance along the lines of work and research;

– The scholarships be granted and maintained in the form of commitments between the candidates and the various institutions involved. For students belonging to institutional programs for training of faculty, the scholarships and supplementary aid be granted through the candidate's institution; in other cases, scholarships be granted to whom should present work plans, for individual or team work, and considered relevant by the institution giving the courses.

c) Educational Process and Scientific Production

Since the courses act in a way to transform the knowledge and the aptitudes of a heterogeneous group of candidates, its educational process must introduce diversified activities for learning, the training and formation of these candidates. Graduate Studies have greater demands according to level and relevance of subjects and it is at the same time an intensive work process. For this reason it is advantageous that:

– The present spectrum of educational and teaching methods be enlarged to offer more adequate resources to each community of students;

– The process of scientific production be developed in order to permit, at the same time, the initial training of future researchers and the implementation of projects with potential for technical and social innovation;

– A progressive articulation of curricula and educational topics be promoted between the Undergraduate and Graduate levels;

– The utilization of laboratories and project offices be given more emphasis for joint Undergraduate and Graduate activities, taking care of the Scientific Methodology involved and progressive mutual effort of groups of students, professors and researchers, along the lines of long term research.

– The credit systems and the criteria of graduation should be perfected and adjusted to completely utilize the time, the subject matter and the topics of the course itself, with the final preparation of a thesis or dissertation in mind. Beyond this, that the students be prepared, right from their enrollment, in research activities, investigation and publishing, as exercise for the thesis, instead of simply postponing it for after the course work.

d) Work Load and Selection of Teaching Faculty

The continulty of teaching and research work depend upon the work load of faculty, researchers and technicians. Plans and long term projects can't be carried out if the work load is fragmented in time and in space. On the other hand, the selection of personnel at this level is important to elevate both the potential of Masters courses and the research centers. As teaching and research activities are typical of groups, the diversification of aptitudes should contribute to a better interaction in team efforts and not for their separation.

Thus, it is considered necessary:

– That the faculty members, researchers and technicians of several courses preferably work in a full time system, hired in accordance with the usual procedures for university personnel;

– That the integration of Undergraduate and Graduate Studies take a significant part of the department staff to exercise activities simultaneously at the two levels, taking into consideration the best distribution of work load;

– That the complementary and specific activities that cannot be carried out by full time personnel be performed through exchange programs, temporary service, part time faculty and visiting professors;

– That the selection of these professionals be planned and timed with the plans for expansion and training, both of courses and universities. Thus, the substitution of faculty who temporarily leave the institution for training and exchange programs, should be planned in function of the expectations for growth and the condition which can bring together elements which are lacking in courses and departments;

– That the criteria for selecting this personnel take into consideration their plans and expectations in pedagogical and scientific terms, with a basis in the aptitudes and student potential for scientific production.

In order that all of these measures can be readily implemented, a high degree of work commitment is necessary among faculty members, researchers and the institution that hires them. One of the principal basis for the maintenance of this commitment will be attained with the systematic promotion of faculty and researchers to the precise categories of degree and salary, caring for the provision of fringe benefits and incentive pay and to the projects carried out at the institution.

3.2.3 -- Guidelines for Performance at the University Level

The set of guidelines furnished for the quality increase of performance at the course level is only feasible if articulated at the institution wide level. Conceptually this means an extension of the work pattern described in item 3.2.1 extending rom course level to university level. We are dealing now with a system comprised of units, centers, institutes, departments and courses related to Undergraduate, Graduate and Research activities. The university is in charge of coordinating the works directing them toward objectives selected by it's components and units. This Plan proposes some guidelines which should positively influence the level of university performance by increasing the performance level of the Graduate system.

The follo ing aspects are treated

a) Programs for upgrading faculty, aiming at the qualification of human resources of the universities themselves;

b) initiatives for programs of internal and external exchange at the universities;

c) economic, financial and organizational rationality of the university related to Graduate Studies activities and its relationship with other activities.

a) Institutional Programs to Upgrade Faculty

The training of their own staffs, without a doubt, provides an increase in the level of information and professional exchange in several areas; it contributes to a greater diversification of aptitudes and it is a strong incentive for the promotion and development of the teaching faculty of the university. For this reason it is convenient that institutional programs of upgrading of faculty be given special attention by the universities. Some of these programs are already under way in several Brazilian universities.

Institutions of Higher Education should, from now on, concentrate their efforts and initiatives toward the improvement of the quality of their human resources in order to accomplish in a relatively short time the objectives of an autonomous training program for groups and nuclei prepared to fill deficiencies as well as open new areas in their teaching and research programs. These programs of upgrading will be institutional initiatives and will be supported and coordinated by the Ministry of Education and Culture, within the following general guidelines:

– Establish the needs for retraining of it's present faculty, foreseeing it's partial replacement in order to compensate for the temporary absence of professors who will attend Masters and Doctoral courses in other institutions, providing for their reentry after the conclusion of courses;

– Estimate the medium and long term behaviour of the Graduate Program expansion in order to prepare in advance the necessary professors;

– Evaluate the present deficiencies by departments and centers, preparing at once the staff necessary for increasing the performance patterns in these areas, always looking for the larger multiplier effect, aiming at the points of greater volume of work and best strategic value for the educational and scientific structure;

– Stimulate within the university a large flow of personnel within the areas, being careful that the absorption of Graduate staff trained and prepared by itself will not be of a very high proportion; this could lead to processes of confinement and isolated growth with the risk of continuously reinforcing its own defects;

– Utilize, in the best possible way, the Brazilian University System and especially the potential already in operation in Masters and Doctoral programs, with recourse to agreements, commitments and joint programs including more than one institution and in more than one geo-educational region.

b) Exchange Program

The exchange of personnel and the interdepartmental and interinstitutional workshops have a fundamental role to play in increasing flow of knowledge, besides being needed for the discussion of complex themes of society and science.

For this reason, it is important that the various forms of exchange among courses,

departments and university units be guided and stimulated, trying to integrate basic and professional areas into more consistent lines of work. The Masters and Doctoral courses have an important function to perform as soon as they offer conditions for research and works of a more complex and interdisciplinary aspect.

In this sense, the performance of the university as a whole will depend much upon the degree of integration and articulation among the various groups and efforts.

The exchange among universities should also be encouraged to implement or stimulate initiatives in institutions that would find enormous difficulty to start or consolidate courses by themselves.

c) Administrative Rationale

The use of working processes typical of Graduate Studies demands an increase in the volume of resources mobilized by the institution, because their costs and operational dimensions are different from those of Undergraduate programs. To increase the economic-financial performance, it is necessary to consider the use of their physical, human and financial resources.

For this, it is important to improve the administrative instruments of these factors, foreseeing the joint utilization by several units of both Undergraduate as well as Graduate Studies, of resources which have a minimum operational scope and can only be supported by the university.

On the other hand, the performance of the courses can be endangered or affirmed by the nature and efficiency of their administrative processes and support services. The joint work of teaching and research requires a sensible improvement in the administrative patterns, being advisable the use of frequent follow up, revision and correction of methods and procedures both at the departmental and course levels, in order to take care of students, faculty, researchers and administrators.

To accomplish this, the following steps are needed:

– Stimulate and support with material resources the production and publication of instructive and scientific works, theses and projects;

– Stimulate the creation and operation of interdepartmental information systems in order to enable a better follow up and coordination of work;

– Integrate and diversify the support services, such as library, museums, filing and editing, all of which have a crucial part in the quality of instruction and scientific work;

– Reduce the installation and operational costs of these services, avoiding their reduction into parcels of a proportion below the economic level and making the potencial of human resources of the courses and research centers themselves seek complementary work in performing these services;

– Promote a broader exchange of the various services among departments and related courses, trying to find a way of overcoming deficiencies through mutual support.

– To increase the fees for use of these services, while rationally expanding the use and availability of those services to all students, faculty and researchers, according to the instructional and scientific needs of the courses and projects, both under way and being prepared.

So that many of these guidelines are successfully implanted and maintained, it is necessary to promote the professional upgrading of the technical and administrative

personnel needed to support research and teaching. Such upgrading would avoid the existing anomaly that this type of support, essential to the efficient performance of the universities and research centers, comes from grants and supplementary financing without any stability.

3.2.4 – Guidelines for Performance at the National Level

To increase the present patterns of performance at the National Level, it is essential to guarantee this growth at the institution level. For this, the National Council of Graduate Studies proposes that the Ministry of Education and Culture, and its agencies responsible for policy and financing of research, establish efficient support schemes in the ways previously described. These lines of support at a national level comprise 4 large groups of activities to be developed by these agencies:

a) The allocation of financial resources in the Graduate Studies System, especially in the case of government aid;

b) The rendering of advisory service and technical assistance for the various phases of implantation of this Plan and of other plans and programs for human resources, science and technology;

c) The activities of divulgation and collection of information in this area on a National Level;

d) The mechanics for recognition and accreditation of courses, institutions and degrees.

Por each one of these organizational areas in which the government should support Graduate Studies and Research, some general guidelines are proposed as follows:

a) Allocation of Resources

The resources to be allocated for the National System of Graduate Studies represent additional duties for the various financing agencies in relation to their present budgets. They are recent duties differing in size and aspect, because there are several sources and destinations that are specific to this system.

The distribution of these funds among the various working areas, the different types of training and the diverse regions of the country directly influence the performance and require more efficient criteria. In the beginning, these should be considered:

– The present availability of funds and those that are foreseen by several financing agencies and by the Ministry of Education and Culture;

– The various operational characteristics of the large areas of knowledge and of the large geoeducational areas;

– The deficiencies and duplications in existence, their present effects and the need for short term solutions to the existing bottlenecks.

Broader guidelines for future financing of the system are stated in item 3.3 and the initial dimensions of the physical and financial expansion is presented in chapter 4 of this Plan.

A substantial part of the resources must be utilized to raise the level and volume of scholarships for Masters and Doctoral students. This will have a direct and positive influence on the performance and multiplying effect in a relatively short time.

In this sense it will be mainly the responsibility of the Ministry of Education and Culture, to adopt a system of training scholarships to be allocated to the institutions

interested in training and upgrading their own teaching staff.

The remaining agencies which provide scholarships, and among whom the National Research Council stands out, must be committed to a consistent policy of scholarships and grants, to meet the demands coming from courses, research programs and training of researchers.

b) Consultant Services

The overall performance of the system can be increased through the stimulation and motivation that the educational policy-making agencies offer to the institutions, with a goal to render advisory services that provide initiatives and the reformulation of their activities. Some of these measures can be: the promotion of exchange programs to train human resources; meetings and seminars for joint discussions of Graduate Studies at the program regional, national, and international levels; services for technical, administrative and instructional assistance, mainly for the implementation of new courses.

c) Information Systems

The performance-level of the institutions and the Ministry of Education and Culture will increase through the effective utilization of a broad system of statistical data, information, documentation and publishing. All the activities previously described and suggested demand support of this nature.

The adequate utilization of this support can provide the institutions, and especially the newer Masters and Ph.D. courses which lack a tradition of exchange, with more appropriate contact among themselves. The existence and operation of this system is fundamental for enabling the agencies responsible for education policy and research to evaluate and re-design their plans, and to register and publish the various studies and proposals they handle.

d) Recognition and Accreditation

One of the legal duties of the federal agencies in operation in the area of Graduate Education, both in teaching and in research, is to propose the formal criteria for recognition and accreditation of courses. Especially for Graduate Education, due to its demands of quality and its multiplying effect, the total performance of the system will be damaged by the inadequacy of these criteria. We must consider that the good performance and quality resulting from it are a consequence of pedagogical, methodological and administrative measures, much more than a result of the utilization of formal criteria. However, these criteria which are legal instruments of the Federal Council of Education and of the National Council for Scientific and Technological Development should exist, being progressively adapted to the other guidelines proposed herein, in order to allow a more rapid and consistent process for the assessment of the quality of teaching and research.

3.3 – Planning for Growth

This item presents the main guidelines for planning and evaluating the development of the Graduate Studies System at its various levels. It begins by conceptualizing the desired process, presenting later a view of the nature of the growth process, and finally arriving at the guidelines needed for directing growth at the university level.

The decision by the National Graduate Studies Council to actively influence the evaluation of graduate education in Brazil is based on the Council's recognition of the fact that, up to now, that evaluation has been partially spontaneous, and that in the cases where it was induced, the predominant criterion was physical expansion due to necessity. A new phase must now begin through a new, more consistent and balanced development process.

3.3.1 – Objectives of Planning

The Graduate Studies System, as defined in item 3.1.3 of this Plan has become an object of state planning. It is considered as a sub-system of the University and the latter as an essential component of the educational system.

The planning and control process of this system will assure a guided expansion of graduate educational and scientific work as a whole.

In this concept, for planning to be effective, it is essential that:

– The various institutional levels make a joint effort in fulfilling their functions, and the deadlines and procedures for presentation, discussion, approval and implementation of initiatives be adapted to the needs of the educational-scientific process;

– Those same guidelines may be interpreted with the necessary flexibility in order to correct distortions and progressively consolidate the system;

– The implementation of these developmental strategies during the next five years should be made through frequent readjustments and planning to meet the needs and possibilities of the departaments, institutions and governmental agencies involved;

– The criteria and parameters for assessing the needs for physical expansion of the system be based on the specific characteristics and formative functions of Graduate Studies within the University and the Brazilian society;

– The programming and the manner of utilization of resources should take into consideration an analysis of the economic and financial behavior of this level of education and the capabilities of the financial funding system.

It can be foreseen that the effective joint partipation of Institutions connected to the National System of Graduate Studies and in the University System, coordinated by strategies and interactions such as described above, will provide a sound underpinning for the technique and policy for planning.

The National Plan for Graduate Studies (PNPg) will thusly perform its role within the scope of the socio-economic development policies, of which it is an instrument.

From this viewpoint, this document and the implementation of its activities should guide and support the training and diversification of human resources, in a way adequate to the national goals of a long term accumulation of scientific and cultural patrimony.

3.3.2 – The Dynamics of Growth

The development of the system materializes with an expansion of the areas of scientific, educational work through a cumulative process, generated from investments for the creation of new courses and research centers and for amplification and diversification of the existing ones.

It is necessary that the planning for expansion take into consideration the nature of this work, in other words, the existence of certain characteristics pertaining to the structuring of scientific – educational work, *independent of priorities*. Two of those are presented herein with the intention of preventing the system from growing full of bottlenecks and disproportionately.

I – Besides participating in the formation of personnel for the *educational system* and for the *work market*, the university trains it's own human resources. These institutions meet the demands that society exercises both in a direct and indirect form; to this diversification of functions corresponds a characteristic range of work schedules, curricular structures and types of university courses;

II – The organization of knowledge and the framework of research and educational methods define, for the university, a matrix of interdependence among the *basic* areas, common to great branches of knowledge and to all the lines of scientific work, the *professional* areas. The aggregation and designation of various types of professional careers, of several subjects, programs and curricular structures, under the form of disciplines and credits, are characterized by fundamental relations of dependency, logical necessity, sequence and requirements among the basic, professional and all intermediate areas.

Resulting from these two characteristics, the alternative allocations of resources among the different types of courses and the various working areas, will furnish *diversified levels of efficiency* to accomplish the objectives of this planning.

In order for the dynamic nature of the process to be respected and the greatest efficiency attained, the following guidelines are adopted as strategies of the several forms of growth and diversification of human resources training in the different working areas and in the various geoeducacional regions of Brazil.

3.3.3 – Guidelines at the National Level

The most general orientation is that the development of the University System be maintained, in terms of human resources, by its own system. Thus, the Graduate courses, in the strict sense, should grow and consolidate themselves as agents for training personnel, that is, as the generating sector of human resources for the society. This is the University.

Thus, making an estimate of the current level of the Graduate System and the University System and taking the various initiatives for correction, expansion and diversification, there is a need to adequately apply the resources in the expansion plans of personnel needs for the university and secondary education and for training professionals on the higher education level and Graduate level for the work force. To do so, there are two basic strategies:

a) Minimization of constraints

b) Greater efficiency of investment and endowments

a) Minimization of Constraints

An attempt will be made to minimize the constraints on the Graduate Studies system through its integration into the University System, directing the expansion to diversify and increase the level of attention paid to the various types of demand. This is justifiable because the

deficiencies of human resource have produced bottlenecks in many sectors of Brazilian society and have generated set constraints on the whole university system and especially on specific areas of the Graduate Studies System. However, the university itself faces the problem of bottlenecks due to the lack of qualified faculty and technical personnel. In its case it is much more serious because of its role as agent responsible for building up new resources and in charge of producing scientifical works.

While the minimization of the constraints originates more from strategical measures than from financial ones, the physical development of the system and a real increase of resources committed to it, is foreseen for the upcoming time span.

It is essential to completely meet the demand, diversifying its form as follows:

– Transform the Graduate Studies courses in the strict sense of Masters and Doctoral, for which this Plan is presented, into effective nuclei to train qualified personnel in higher education and research;

– Activate and stimulate the Graduate Studies courses in the broad sense – upgrading and specialization through specific programs in order to serve in the most efficient and flexible way the present needs of the work force;

– To look for a geoeducational polarization for the implementation of the Masters and Doctorate courses, consonant with the geossocial expansions foreseen for the period, within the scope of national plans for economic and social development. Because of this, it can be foreseen that the professional areas of graduate work directly sought by the professional work market will have a better quality of person to offer, alleviating many times the search for the better qualified personnel in the Masters and Doctoral courses, a temporary and inefficient solution as it is observed today. And, with this, a short-term improvement of the working conditions in the entire university, without which it is not possible to grow in the intended form in a long range effort.

b) Efficiency of Investments and Endowments

To achieve a higher efficiency of the investments in the university system and especially in Graduate Studies in the strict sense, consideration will be given to the characteristics described for the development dynamics in choosing priorities. Beside that, in the selection of programs and investments, criteria for an economic scale of operation will be utilized, that is, the legal-administrative support of the institutions and its educational-scientific potencial.

In the first place, the larger multiplying effect of development will be reached when the attainment of the initiatives for creation of the Masters and Doctoral courses is assured, aimed at training teaching faculty and researchers for the basic areas of educational scientific work. With this the Brazilian university should start to operate in a more sound way within its own human resources sector and in the areas dealing with basic tools for scientific production and professional qualification. Included here are: Education, which transmits to the other areas the concepts and the organizational practices of the proper educational works; the Exact Sciences, Natural Sciences, Biological Sciences and Social Sciences which constitute the usual program for all scientific work and the professional training in the areas of technology, health careers, social careers, and agricultural-industrial careers.

Secondly, we take into consideration the following general guidelines, to increase the efficiency of investment and endowments:

I – Economic scale of operation: within the scope of federal investment, it is important to consider not only the additional investment made in an institution, as related to its assets or budget, but the participation of this institution in the total investment made by the union. Thus, to expand Graduate Studies in large institutions may represent additional minor investments on the part of the Federal Government. In the options for expansion among Institutions of different sizes, consideration should be given the possible effects of level: both the advantages and the previous existence of greater work potential, as well as the disadvantages, such as the costs and difficulties of coordination in an excessive conglomeration.

II – Legal-administrative subordination: the governmental support to the initiatives for opening and increasing courses in the private teaching and research institutes of learning should be oriented toward areas and specific cases, once the high costs of many Masters and Doctoral courses are beyond the possibility of maintaining them at a good level, utilizing only school tuition funds. In cases where the entities overcome theses difficulties, usually greater than Undergraduate expenditures, the Federal Government can allocate part of the total resources for payment of scholarships and student's tuition to the initial implanting of courses and financing of projects and researchers.

III – Educational-scientific potential: the expansion through the creation of Masters and Doctoral courses in universities is more advisable, as a general rule, than the creation of them in research centers. The reason for this guideline is in the fact that the university in general, offers all the activities of a unit for educational-scientific work, while an isolated research center presents only a subgroup of this activity. This doesn't mean exclusion and, in individual cases, the potential of an isolated nucleous can be greater than the university potential, but the criteria for investment should take into consideration the largest possible multiplying effect.

Among the options for universities, consideration will be given the possibilities of exchange and polarization to avoid the worsening of regional and local concentrations. At the institutions where the current potential is poor but strategically the creation of Masters and Doctoral courses would be convenient, the investment should be made as soon as possible in order that the future initiatives should not bog down in estrictions of such a nature. In order that guidelines be completed, and on nation wide scope, the efforts will be directed, in a solid and positive way, toward the geoeducational setting of human resources.

This is essential for strengthening less developed regions and programs where the Masters and Doctoral courses will act as generating points and will be integrated into the communities.

In order to justify these guidelines and these criteria for planning in a secure way, it is convenient to point out once more that Graduate Studies has a strategic role for the university dynamics and that the long time for maturation and reproduction of these investiments is a characteristic common to the expansion previously described. Due to this fact, both the delay for planned application of resources in the sector and the use in professional areas without the necessary agreement in the basic and intermediary areas will tend to increase the present bottlenecks. The inevitable result will be that the costs will be higher and the solution of problems for future plans will be seriously demaged.

Due to all of this, the effective participation of planning and financing agencies at the interministerial level is considered to be basic during the next five years in accordance with the characteristics of the different phases and areas of expansion of the Graduate Studies System.

3.3.4 – Guidelines at the University Level

The principal strategy for development at the university level will consist in promoting the consolidation and the more efficient growth in terms of human resources, to the degree that the constraints caused by the development of the system up to the present, are overcome.

Thus, the Graduate Study activities should be polarized according to the sociocultural area where each Institution operates. Such an alternative attempts to avoid the excessive division of efforts, on all sides and the exaggerated concentration of activities in certain programs and regions. For this reason, long term effects of the various alternatives of polarization should be foreseen and the basic initiatives for synchronization of expansion and diversification activities should be programmed.

The initiatives for creating new courses and for increasing and diversifying the existing ones will start from both the agencies for Educational Policy making as well as from agencies for supporting research, such as the university through its academic units. In any case, these initiatives should become effective in accordance with the procedures stated herein:

a) Define its *characteristics* in order to meet the current and future demands of Undergraduate and Graduate Studies, faculties, researchers and professionals for the research institutions and for the regional work market;

b) Fix the *required resources* in terms of type and volume, investigating their own possibilities and availability and of the various financing sources in agreements with the characteristics of budget, supplements, agreements and aids, and with the specifications of the utilization of funds from each source;

c) Work up *specific projects* for these initiatives, clearly stating their objectives in terms of building up initial nuclei and opening and diversifying interdisciplinary areas. These projects will be worked up at the institutional level by groups of students and faculty who are directly interested; coordinated by the departments involved, and advised by the universities, by MEC (Ministry of Education and Culture) and by the other agencies and financing entities.

By employing these guidelines, it is expected that the genuine problems of development will be discussed, expressed precisely and solved, all the way from the student level, through researchers and faculty, up to the ministerial level, involving all in the development of the system and always considering in each case the various possible strategies according to the institutional needs and working processes.

4. PROGRAMS AND GOALS FOR EXPANSION.

This chapter presents the general lines for expansion as outlined for the five year period 1975/1979. From the beginning, the nature of this program is described as well as its principal criteria, the initial conditions and some important limitations. Following this are the goals for awarding titles and increase in level and three programs necessary to implement these goals: granting of scholarships, institutional upgrading of the faculty and admission of professors. Finally, additional financial resources to be utilized in the Masters and Doctoral courses are measured and some short term steps are suggested.

The principal goal of this chapter is to establish feasible values, getting them from calculated patterns which allow the measurement of higher education needs and reevaluating them in light of the true limitations which exist in the current situation.

4.1 – Nature of the Program

4.1.1.– Criteria and Instruments

The program indicated utilizes criteria and parameters built from the guidelines of the Plan, especially from directive 3.3 which defines in general lines the strategies for development. This implies:

– Calculating the demand for Masters and Doctors starting from the needs of faculty for higher education, including the needs of the proper Masters and Doctoral courses;

– Taking into consideration the framing of educational and scientific work through the utilization of a matrix which represents the mutual dependance among the various subjects and the different curricula now existing;

– Foreseeing the operational conditions and performance of courses in a way which makes possible an estimation of the levels of productivity, the possibility of student drop out and attention to the professional work market.

The National Council of Graduate Studies recognizes that the criteria for measurement in itself does not induce the development of this system in the planned direction and proclaims the usefulness of employing certain instruments of educational policy to reach the desired values. The following can be pointed out:

a) Changes in the work systems of the faculty should contribute to the improvement of the relationship professor hours per student;

b) Setting in motion programs for institutional upgrading, according to article 3.2.3.a) of this Plan, must achieve a significant part of the demand for vacancies in the Masters and Doctoral level courses both in the country and abroad;

c) The initiatives for creating new courses and an increase in the existing ones should be investigated through programs of scientific and technological research and programs for training human resources, both on a regional and program level, implying a selection when furnishing aid and entering agreements;

d) The mechanisms for granting scholarships should move quickly and systematically in

order to meet the increasing demand both in volume and diversity;

e) Graduate Studies in the broad sense – that is specialization and upgrading – even though not included in this program, should be activated by the institutions in order to fill the gaps in the work market demands.

In general, the strategies for implantation are defined in the three guidelines of this document, and the persons and entities involved with this are responsible for the compatibility of the quantitative goals with the qualitative aspects of the guidelines stated herein. This does not mean that the goals in numerical terms should be reached at any price but, to increase the entire Graduate Studies System in a planned manner, legalizing it, consolidating it, and, at the same time increasing its performance, its quality and its productivity.

4.1.2 – Initial Conditions

Since the calculations were made from the needs of the teaching staff for Undergraduate Studies, a statistical view of the situation in 1973 is presented.

Chart 1-A presents the data related to the number of students, number of faculty and their distribution by the various types of courses, by administrative subordination and geographic region.

Chart 1-B presents a visual comparison between the percentage distribution of students enrolled in courses of each undergraduate area and the percentage rate of available enrollment in the respective Masters courses, permitting one to visualize the imbalance in offerings of vacancies in some areas.

It is important to point out that the number of undergraduate students presented on charts 1-A and 1-B do not coincide with the number of students enrolled in each course, because a specific course is made up of a series of subjects from different areas. This occurs because the method of calculation is based upon a matrix of undergraduate curricula, built from the minimum curriculum established by the CFE (Federal Council of Education), which interprets the related dependency and curricular connections. This way, it can guarantee a coherence of the reality of the demand upon the faculty in each area and diminish the probability of a distorted program which could provoke divisional bottlenecks.

To compute the present number of vacancies for Masters and Doctoral students registers and estimates from various sources and official documents were used, based on statements and reports from the institutions themselves. The numbers, however, represent estimates of the nominal capacity for enrollment of students who began the course in 1975.

The situation of Masters and Doctoral courses and the distribution of their available enrollment by area, region, and administrative dependence are presented in charts 2-A and 2-B.

The association made is also based on the curricular matrix, attempting to group the subjects into broader areas according to the composition of curricula and with the characteristics of the work market: four areas, including the so called basic sectors and

five others related to the so called professional sectors.

Given the undergraduate situation in 1973, with the help of estimates in 1974, rates of enrollment expansion and the number of students in the system were calculated; and, with the ratio Professor/student in the proportion of 1/10 or 1/15, according to the area, the needs were calculated for new faculty members in undergraduate studies during the five years period 1975/1979 as shown on chart 3. With this, the main component in the demand for Masters degree professors can be indentified according to the ideal working conditions for the entire higher education system, independently of regions or administrative dependence. Thus, to meet the undergraduate expansion with conditions of better quality than the existing ones, it would be necessary to prepare and have nearly 41,000 new faculty members during the five year period.

CHART 1-A: Undergraduate Education – 1973

COURSES	STUDENT ENROLLMENT				FACULTY	NUMBER OF EXISTING COURSES					
	TOTAL	DISTRIBUTION %				N	NE	CW	SE	S	TOTAL
		F	S/M	P							
Education	67,700	10	18	72	3,800	3	23	10	186	48	270
Physics	8,200	36	27	38	2,820	2	12	4	2	9	54
Mathematics	29,300	17	20	63	4,690	3	21	9	113	31	177
Chemistry	7,400	42	15	43	2,340	3	15	3	31	10	62
Earth Sciences	1,200	100	–	–	530	1	4	1	6	2	14
Biol. Sciences	12,000	23	21	56	3,770	2	11	4	41	13	71
Soc./Anth./Pol./Sc.	14,200	23	18	59	2,420	1	8	4	49	13	75
Philosophy	5,200	33	10	57	1,840	1	13	1	25	18	58
History	14,500	26	26	48	1,740	1	19	6	69	22	117
Geography	12,100	29	22	49	1,380	1	17	8	44	20	90
Economics	41,000	22	14	64	2,950	5	33	13	131	59	241
Psychology	24,900	28	6	66	920	1	6	4	36	9	56
Engineering	56,300	44	13	43	7,040	6	36	7	157	39	247
Medicine	50,200	44	11	45	7,070	3	14	4	45	15	81
Dentistry	14,500	45	21	34	2,160	2	12	3	26	9	52
Pharmacy	6,700	75	25	–	980	2	6	2	10	6	28
Nutrition	1,200	67	33	–	80	–	2	–	5	1	8
Nursing	6,300	31	32	37	1,590	2	15	2	18	9	46
Administration	67,500	8	8	84	3,470	2	19	6	112	38	177
Law	88,000	18	10	72	3,120	3	18	9	62	23	115
Library Science	2,800	64	11	25	250	2	5	1	9	5	22
Communications	14,500	22	3	75	800	1	9	2	27	9	48
Archt./Urban.	10,200	42	8	50	630	1	5	2	16	4	28
Agronomy	10,600	62	25	13	2,200	1	10	2	13	18	34
Veterinary Sc.	8,000	51	41	8	530	1	4	2	7	7	21
Letters	71,400	10	18	66	6,230	1	10	2	13	8	34
TOTAL	647,900	25	15	60	65,330	64	460	139	1,801	606	3,070

Sources: SEEC; General Catalogue of Higher Education Institutions; DAU/MEC – 1973
F = Federal Institutions; S/M = State and Municipal Institutions
P = Private Institutions; N = North, NE = Northeast, CW = Center West, SE = Southeast, S = South

CHART 1-B:
Comparison of the Percentage Distribution of Undergraduate and Masters Courses

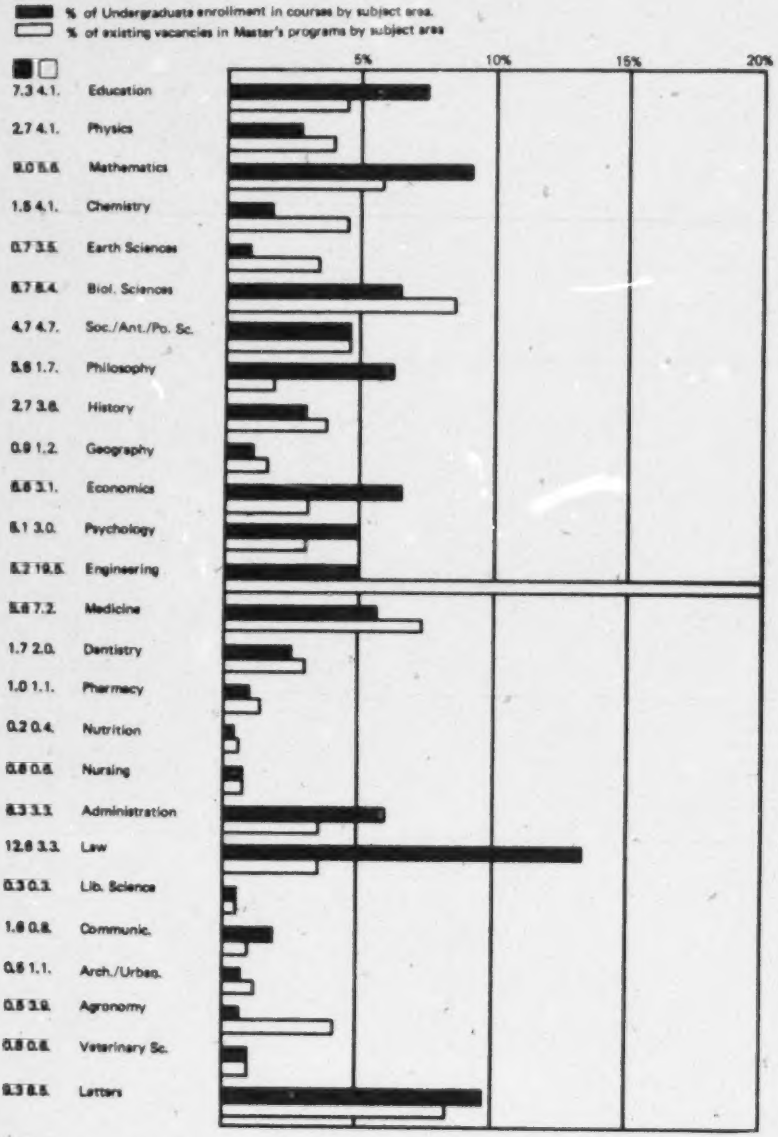


CHART 2-A:

Nominal Enrollment capacity in Master's and Doctoral courses and percentage distribution by administrative pattern – 1975 estimates.

MASTERS' DEGREE						AREAS	DOCTOR'S DEGREE					
%					TOTAL VAC.		TOTAL VAC.	%				
N	NE	CW	SE	S				N	NE	CW	SE	S
–	3	12	47	38	290	1. EDUCATION	–	–	–	–	–	–
–	10	12	71	7	290	2. PHYSICS	35	–	–	–	86	14
–	14	6	74	6	390	MATHEMATICS	35	–	–	–	100	–
–	14	10	64	12	290	CHEMISTRY	60	–	–	–	100	–
6	29	4	35	26	245	EARTH SCIENCES	35	14	14	–	58	14
–	12	24	56	8	595	3. BIOLOGICAL SCIENCES	96	–	–	–	90	10
–	8	25	48	19	330	4. SOC./ANTH./POL. SC.		–	–	–	–	–
–	8	13	67	22	120	PHILOSOPHY	–	–	–	–	–	–
–	10	–	69	21	255	HISTORY	–	–	–	–	–	–
–	–	–	100	–	85	GEOGRAPHY	–	–	–	–	–	–
–	27	23	27	23	220	ECONOMICS	5	–	–	–	100	–
–	–	–	72	28	215	PSYCHOLOGY	–	–	–	–	–	–
–	7	7	76	10	1,375	5. ENGINEERING	50	–	–	–	100	–
–	10	6	80	4	510	6. MEDICINE	80	–	–	–	100	–
–	7	–	69	24	145	DENTISTRY	–	–	–	–	–	–
–	–	–	75	25	80	PHARMACY	10	–	–	–	100	–
–	67	–	33	–	30	NUTRITION	–	–	–	–	–	–
–	–	–	100	–	40	NURSING	–	–	–	–	–	–
–	–	13	74	13	235	7. ADMINISTRATION	–	–	–	–	–	–
–	11	–	83	6	235	LAW	25	–	–	–	100	–
–	–	–	100	–	20	LIBRARY SCIENCE	–	–	–	–	–	–
–	–	36	64	–	55	COMMUNICATIONS	–	–	–	–	–	–
–	4	24	44	28	270	8. AGRONOMY	35	–	–	–	100	–
–	–	55	27	18	55	VETERINARY SCIENCE	–	–	–	–	–	–
–	–	9	69	22	800	9. LETTERS	20	–	–	–	100	–
1%	9%	11%	65%	14%	7,060	TOTAL	485	1%	1%	–	94%	4%

SOURCES: The Same of Chart 2-A

Note: N = North; NE = Northeast; CW = Center West; SE = Southeast; S = South.

CHART 2-B:

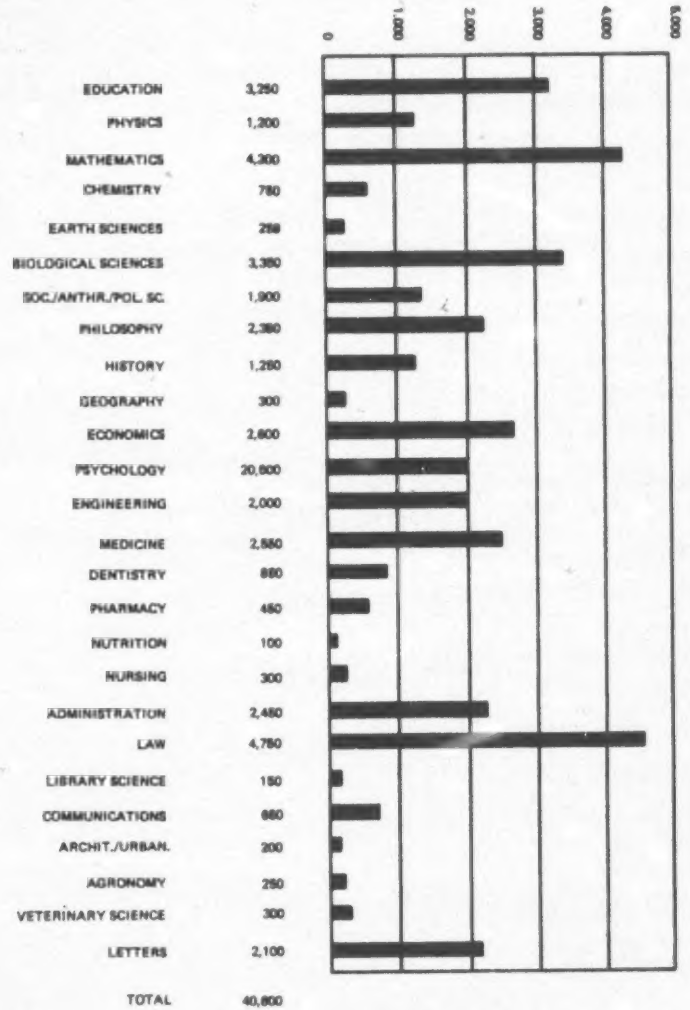
Nominal Enrollment capacity in Master's and Doctoral courses and percentage distribution by region – 1975 estimates

MATER'S DEGREE					DOCTOR'S DEGREE				
%			TOTAL VACANC	AREAS	TOTAL VACANC.	%			
E	S/M	P				F	S/M	P	
54	22	24	290	1. EDUCATION	–	–	–	–	
52	36	12	290	2. PHYSICS	35	29	42	29	
57	29	14	390	MATHEMATICS	35	86	14	–	
59	34	7	290	CHEMISTRY	60	34	58	8	
74	26	–	245	EARTH SCIENCES	35	57	43	–	
63	34	3	595	3. BIOLOGICAL SCIENCES	95	37	63	–	
41	53	6	330	4. SOCIOLOGY/ANTHROPOLOGY/POL.SC.	–	–	–	–	
33	33	34	120	PHILOSOPHY	–	–	–	–	
27	43	30	255	HISTORY	–	–	–	–	
–	70	30	85	GEOGRAPHY	–	–	–	–	
73	18	9	220	ECONOMICS	5	100	–	–	
19	21	60	215	PSYCHOLOGY	–	–	–	–	
65	25	10	1,375	5. ENGINEERING	50	70	20	10	
57	34	9	510	6. MEDICINE	50	44	56	–	
35	48	17	145	DENTISTRY	–	–	–	–	
63	27	–	80	PHARMACY	10	50	50	–	
100	–	–	30	NUTRITION	–	–	–	–	
–	100	–	40	NURSING	–	–	–	–	
27	36	39	235	7. ADMINISTRATION	–	–	–	–	
19	72	9	235	LAW	25	40	60	–	
100	–	–	20	LIBRARY SCIENCE	–	–	–	–	
91	9	–	55	COMMUNICATIONS	–	–	–	–	
87	13	–	75	ARCHITECTURE/URBAN PLANNING	–	–	–	–	
61	39	–	270	8. AGRONOMY	3	28	72	–	
100	–	–	55	VETERINARY SCIENCE	–	–	–	–	
38	24	38	800	9. LETTERS	20	75	25	–	
5.2%	33%	15%	7,050	TOTAL	485	48%	48%	4%	

SOURCES: MEC/UFHGS Contract; General Catalog of Higher Education Institutions, 1973; PBCDT – Tasks Groups in Fundamental Research and Graduate Studies, 1974.
NOTE: F = Federal Institutions; S/M = State and Municipal Institutions; P = Private Institutions.

CHART 3: Teaching Faculty Needs For Undergraduate Education in the 1975 – 1979 period

Note: Figures from the Curricular Matrix and from 1973 data SEEC.



4.1.3 – Restrictions and Alternatives

Establishing the main components of faculty demand, we must still consider:

a) The need to train part of the present faculty preferably on the Masters and Doctoral level;

b) The need to take care of the demand for highly qualified Masters degree professionals, especially in the areas directly linked to the work market and to the areas of production;

c) The need to graduate, in view of programs resulting from the scientific and technological policy, researchers for the teaching institutions and research centers.

Quantifying all the data indicates the need for double the number of 41,000 Masters already foreseen. This certainly is not a realistic goal since the present system has the capability to receive only 7,000 candidates per year and suffers problems of low efficiency. Besides this, which is considered to be the principal limitation to the goals of this Plan, others are stated here with the aim to direct more attainable expectations: it is not always feasible to increase available enrollment vacancies by the simple infusion of financial resources. Rather, it is necessary to have the potential of scientific production and programs for upgrading of staff; not all of the training programs for the present faculty can be equally carried out in the different institutions, because training professors implies and infrastructure to release him from his work, replacing him and guaranteeing his salary while he is doing Graduate work; not all of the new needs of professors for the undergraduate level are filled with people holding Masters and Doctoral degrees, especially because in the system of private, municipal and state institutions there is no formal instrument that leads to this in a wide scale, as in the case of the federal system; the different requests of the work market are reflected in higher education by creating differences of professional viewpoint, remuneration and "status" among the various levels of training, and this influences considerably in student drop out from the Masters and Doctoral courses, and consequently in their productivity.

The alternatives utilized by the Federal Government in the face of these restrictions can be sumarized in the following claims:

– That it is feasible to employ upgrading programs to train during the period, between 10% to 20% of the present faculty, according to the possibilities of the different areas of work;

– That the vacancies for qualification of *new professors* are sufficient to meet approximately *80% of the demand for the federal system, 50% of the State, Municipal System and 20% of the Private System;*

– That the specialization and retraining courses which have been encouraged on a large scale may contribute toward a significant improvement of the faculty quality, without awarding the Masters and Doctors degrees.

Besides this, we believe that the total performance of courses will be more efficient than currently, allowing the system to graduate on the average in a five years period, between *50% and 60% of candidates enrolled.* It is worthwhile to point out that the professional areas 5, 6 and 7, respectively Enginnering, Health and the Social Professions,

began the school term with a productivity around 20% to 30% and should develop a special effort toward the improvement of operational conditions.

4.2 – Goals and Expansion

Based upon the calculations of the Plan described and considering the existing limitations, the National Council of Graduate Studies establishes the following as goals of this Plan:

1. Conferral of Degrees: Foster in the country the complete training and the corresponding degree conferral of approximately 16,800 Masters and 1,400 Doctors during the five year period 1975/1979, as shown on chart 4-A;

2. Enrollment Capacity: Increase and provide the enrollment capacity in Graduate Studies courses for the country, surpassing 7,000 and approaching 11,700 Masters degree vacancies per year and going from 500 to nearly 1,200 Doctors degree vacancies annually at the conclusion of the five years period 1975/1979.

The first goal – The Degree – is shown in chart 4-A, and the distribution by program refers to a criterium for aggregation based upon the curricular matrix, without allowing rigid boundaries between one area and another of educational-scientific work. In view of the county's needs, the ideal would be that already in the first years of the period a significant number of people receive degrees to make up for the current deficiencies. However, the indicated development is of an exponential nature, starting from a slow beginning, due to the present dimensions of the system and the unavoidable and necessary lapse of time in order to carry out the increase and the opening of new vacancies. Besides this, the results of any policy which proposes to increase the performance and the productivity (as stated on the guideline 3.2) will be felt with the natural gap of 2 years for the Masters degree and 4 years for the Doctors degree. During the five years period approximately 1,400 Brazilians who are now doing graduate work abroad will receive degrees.

The second goal – enrollment capacity – can be consolidated in two principal ways: the increase which will take place by the programmed opening of new courses and the provision of vacancies in courses that are operating now under poor conditions due to the lack of financial, human, and/or organizational resources. In global terms, nearly 70% of the new vacancies will be created in Federal Institutions according to the guideline of item 3.3.3.b).

The program and regional distribuition of these new courses must be subject to definition by this Council, making sure that the directive 3.3 be taken in its essential objectives to attain the greatest possible multiplier effect. In order to accomplish this, it is important to consider the strategic role represented by the basic scientific areas (areas 2, 3 and 4 of the chart 4-A), on which depends all the potential for higher education and scientific production. On the other hand, the regional distribution will try to maintain among the capability of undergraduate and of Graduate Studies, a rate of proportionality in each geoeducacional region in order to avoid the persistance of regional differences. With the achievement of this goal, the number of students in the system will exceed the present 13,500 and approach 25,000 in 1979.

CHART 4-A: GOAL 1 – Masters and Doctoral Degrees in Brazil

AREAS	1975	1976	1977	1978	1979	TOTAL 1975/1979
1. Education	150	150	200	250	300	1,050
2. Physics, Mathematics, Chemistry, Earth Science and other exact sciences	550	600	700	800	950	3.600
3. Biological Sciences	350	400	450	500	600	2.300
4. Sociology, Antropology, Political Science, History, Geography, Philosophy, Psychology, Economics and other social sciences	300	350	450	600	800	2.500
5. Engineering	250	300	400	500	700	2.150
6. Medicine, Dentistry, Pharmacy, Nutrition and other Health professions	200	250	300	400	700	1.850
7. Administration, Law, Communications, Architecture, City planning, Library Sciences and other social professions	150	200	250	350	450	1.400
8. Agronomy, Veterinary, Food Technology, Forestry and Fishing Engineering and other agri-industrial professions	200	200	250	250	300	1.200
9. Letters and Linguistics	150	150	200	200	250	950
TOTAL	2.300	2.600	3.200	3.850	4.950	16.800

	DOCTORS
TOTAL	1.400

4.3 – Programs

The political-administrative process, launched forth by this Plan, should be conducted in accord with the proposed guidelines, being careful in the first place, that the decisions be related to the Second Basic Plan for Scientific and Technological Development, as an essential condition of *congruity with the governmental plan*. Secondly, that the policies and resulting programs be representative in their conceptualization and utilization at the university or teaching institution level as an essential condition of *commitment to the educational plan*.

As this is a plan of expository nature for the formation of human resources and at the same time expressive of a state investment of considerable size and of long range, the goals are based on forecasts of performance in the system while limited by some institutional and operational characteristics of the present system. In order to implant it the Federal Government initially makes use of a whole complex of instruments in the form of programs:

1) Granting of scholarships for full time students, a program already existing in the present educational policy, which criteria the Plan expercts to reorganize and guide;

2) Institutional programs for upgrading faculty, recently created and carried out in small scale at MEC (Ministry of Education and Culture), and which the present Plan will try to extend to the other higher education institutions during the coming five year period;

3) Enrollment of faculty in a consistent and programmed manner by the institutions, which policy is also recent and will need to be improved in order to attain the objectives and goals of the present Plan.

The three programs are clarly interdependent and demand a reasonable quantity of coordination and commitment, which is expected to be reached during the period.

In the same political-institutional scope of these programs others besides these will be under negotiation and accomplished; there will be programs under way through previous agreements and projects; there will be divisional and regional programs for building up human resources. In the entire university and especially in areas where efficient combinations of undergraduate, graduate studies and scientific production exists, there will be programs and projects related to the technological policy of the Federal Government, which most probably will help students and professors to focus in on positive and concrete works, conferring a rewarding and responsible feature to the university activities. The existance and the conditions for implementation of these programs must be considered in the decision-making process resulting from the programs established herein and of those that will follow during the implementation phase of this Plan.

The quantitative dimension and the distribution in time of these programs are shown in the charts 4-B, 4-C, and 4-D; afterwards, they are studied in the essential terms of their orientation and operation, which analysis will occur during the implementation of this Plan.

1. The granting, of a total of 52,000 scholarships in Brazil for full time students of both Masters and Doctoral level courses during the time span; a total of 7,650 scholarships abroad, corresponding to transportation and maintenance of 3,500 new scholarship recipients.

Chart 4-B: PROGRAM 1

Scholarships/Year to be Granted by Federal Agencies						
YEAR	1975	1976	1977	1978	1979	Total
(Brazil) In the Country	5,500	8,500	11,000	12,600	14,400	52,000
Abroad	400	950	1,650	2,100	2,550	7,650

2. Extension of institutional programs for upgrading in a way to involve, approximately 12,000 teaching faculty or teacher candidates during the time span.

Chart 4: PROGRAM 2

Number of faculty or future faculty, who will yearly enter Masters and Doctoral courses, through the institutional upgrading programs						
YEAR	1975	1976	1977	1978	1979	Total
FACULTY	300	1,200	2,500	3,500	4,500	12,000

3. Admission of approximately 2,000 new faculty with full time work for the departments, where they exist, or where increased or where regular Graduate Studies activities and scientific production are begun.

Chart 4-D: PROGRAM 3

Number of new full time faculty to be hired per year on a full time basis						
YEAR	1975	1976	1977	1978	1979	Total
FACULTY	300	300	350	500	550	2,000

The basic orientation for the program of granting schorlarships originates from item 3.3.2b) of this Plan and from the criteria of the agencies furnishing them at the federal level. Overall the number of scholarships of federal origin presently reaches 40% of all Graduate students and it should reach 60% of the annual demand during the time span. The principal emphasis in sending 3,500 new participants abroad, that part of the program that will cost approximately US$ 70,000,000.00 (seventy million dollars, using 1975 figures), will be the training of faculty at the Doctoral level. Part of the resources will be employed to train people at the Masters level and other relevant professional activities in specific teaching and research programs.

The emphasis in training Doctoral personnel abroad is justified by the urgency with which determined areas need to have their first research nucleus set up. The delay and lack of support to these people and their institutions will aggravate more and more the lacuna in many sectors of National life. In the phase of selection of institution and country destination for participants, the criteria should consider the overall international scene of university activities and the specific working conditions to be developed by the professors upon their return and integration into Brazilian institutions.

Regarding the second program – institutions' capability – the essential topics are stated in item 3.2.3a) of this document and in the procedures already utilized in the programs now under way. The scholarships related to these programs will be used to supplement the salaries of those already teaching or to assure a commitment of the ones who are not, keeping their future hiring in mind; these grants are a subgroup of the volume forecast in program 1. The institutions should initiate, during 1975, the projection of needs to overcome deficiencies in the undergraduate and graduate courses. This requires multiannual plans to coordinate the departure of their staff to receive Masters or Doctoral degrees in the country and abroad, granting these programs a permanent status as an instrument of development and expansion of their own institutions. These initiatives provide conditions for offering a general interest for university activities and particularly for the faculty since they will contribute to the general improvement of the working conditions as well as to the quality of teaching. From the Federal Government's point of view, it is an effective instrument to the degree that their positive results will be felt in all higher education, in the scientific activities and the other educational and professional activities throughout the country.

The third program – hiring of faculty – has its general guidelines described on item 3.2.2.d) and will have to refer frequently to the general criteria for contracting faculty, especially for Federal institutions.

It will not be only these 2,000 professors who will be absorbed during the period, since the expansion and the normal replacement of the university staff will demand more than that. However, their entry should be programmed so that the Graduate courses are increased and provided, linking them to the departments, with their categories of level and correct salary, granting them teaching responsibilities at the Graduate, Masters and Doctoral degree levels, and scientific responsibilities for the regular performance of relevant projects, proper to the institutions and/or related to governmental programs for scientific and technological development.

These professionals may be selected from among the 1,400 Doctors who will be graduated in the country (according to goal 1) from among 1,400 who are abroad and will return during the period, and also by bringing scholars from abroad. In this case, emphasis

should be given agreements and long term exchange programs especially for deficient programs for which it is fundamental to begin and consolidate national groups for teaching and research; and, in the criteria for selection, consideration should be given the country and the institution of origin of the professors, their present area of work and the cultural, academic and scientific relations between the country involved and Brazil in order to reach an effective reciprocity in these exchanges.

4.4 – Financial Resources

The programs described in the previous item and the other activities that will be developed in higher education to conduct Graduate Studies to the intended levels of attendance, quality and productivity, will require for the period 1975/1979 the utilization of approximately Cr$ 8,700,000,000 (eight billion and seven hundred million cruzeiros). Of this amount a total of Cr$ 5,840,000,000 (five billion and eight hundred and forty million cruzeiros) will involve federal budget resources and outside budget funds, proceeding from the Ministry of Education and Culture, from Federal Institutions of Higher Education, from the National Council for Scientific and Technological Development, CNPq (National Research Council), FUNTEC/BNDE (Fund for Technology of the Bank for National Development), FINEP and other governmental agencies, including other Ministries. The other part, estimated in Cr$ 2,860,000,000 (two billion, eight hundred and sixty million cruzeiros), will involve resources coming from the State and Municipal Governments, private entities and foreign agencies, assuming however the form of an investment not programmed by the federal government. Consequently, its value is an estimate, based upon the expansion forecasts of that part of the system which is not federal.

The more recent accounts, related to 1974, indicate the annual utilization of approximately Cr$ 1,050,000,000 (one billion and fifty million cruzeiros) of which nearly 70% are resources of federal origin. Therefore, to maintain the current level of activities and expenses, the federal government will spend, during the period, Cr$ 3,680,000,000 (three billion and six hundred and eighty million cruzeiros) according to account 1 – Chart 5.

The physical and financial dimensions for the expansion foreseen will demand additional resources from all the institutions and agencies that in one way or another finance Graduate Studies. In accordance with the legal-administrative dependence of the units where these courses operate, and according to the nature of their complementary and related activities, such as Undergraduate Teaching and Scientific Production, a relative diversification of sources and forms of financing can be present, such as we see even today. The most general guideline related to the financial stability of the institutions is in item 3.1.3 of this Plan; the criteria for the allocation of resources at a national level are established in item 3.2.4a) and the guideline for a higher efficiency of investment is stated in item 3.3.3b). Since it deals with a rather complex and varied financial system, its operation during the coming 5 (five) years will still demand work which will enter into great detail, establish budgetary procedures, deal with the transfer of funds, and coordinate the various administrative channels of the system.

The total additional resources that the Federal Government will spend for the expansion of Graduate Studies during the period, the amount of Cr$ 2,300,000,000 (two

billion and three million cruzeiros), will be distributed as follows:

a) hiring of teaching staff; b) hiring of administrative-technical personnel; c) maintenance of the regular activities of courses; d) granting of scholarships; e) creation of new courses, including such items as construction, necessary equipment, library resources, etc.; f) implantation of this Plan through important initiatives for its dynamization and participation, using seminars, meetings, technical assistance and other activities not belonging to a particular course or institution.

CHART 5: Federal Resources Allocated to Public Post Graduate Instruction (1975–1977)

PER SOURCE

SOURCE \ YEAR	1975	1976	1977	TOTAL
MEC/DAU	470	520	570	1,560
FINEP (FNDCT) and FUNTEC	300	330	370	1,000
CNPq	140	170	200	510
CAPES	160	200	250	610
TOTAL	1,070	1,220	1,390	3,680

PER OBJECT OF EXPENDITURE

DISTRIBUTION BY YEAR	1975	1976	1977	Cr$ 1,000/79
1. Resources necessary to maintain current level of operation	700	700	700	2,100
2. Additional resources for system growth	250	415	565	1,230
a) Teaching faculty	70	90	100	260
b) Technical and administrative personnel	10	15	25	50
c) Non-personnel expenses	40	60	70	170
d) Scholarships	100	210	320	630
e) New degree program development	25	35	40	100
f) Miscellaneous	5	5	10	20
3. Other resources for scientific and technological research (PBDCT)	120	105	125	350
TOTAL	1,070	1,220	1,390	3,680

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4.5 – Short-term Measures

During 1975, the implementation process of this Plan will begin. In this sense, the National Council for Graduate Studies considers it very important that people and institutions involved in these activities make contact with this Plan and begin to discuss it and study it in their places of work, making an effort to participate in its outcome.

With regard to the more immediate steps to reach this goal, it is necessary that the government agencies directly involved, MEC, CNPq, FINEP and BNDE, organize themselves for the implementation work, providing the necessary steps to specify these goals and to submit project activities which will start and expand the courses.

Other important activities will be: a) *the definition and diagnosis of the institutions that provide immediate conditions for the expansion of Graduate Studies*; b) the study and definition of the *alternatives for attraction of funds*, distribution and transfer of the foreseen financial resources, and the release of short terms funds for the beginning of the programs in 1975 and 1976; c) the definite provision for increasing funds already allocated for scholarships, promoting the distribution of a number *significantly greater than* the current and the increase of the present levels, attempting to meet the needs of scholarship recipients who are initiating the course still in this calendar year; d) provision for immediate measures of job classification and salary scale of faculty and support in the institutions where these personnel are employed under an inadequate system of contract, category and salary; provision for the speed and extent of regular initiatives for upgrading through programs developed by the institutions, with the support of MEC as stated in the guidelines of item 3.2.3.

A constant greater degree of commitment and responsibility in this process of consolidation of higher education must be stimulated, intensive in this first phase, and moderate later on through the promotion of meetings and seminars for the discussion and study of the problems of implementation of the Plan, including the participation of faculty, support staff, students and representatives from public agencies, teaching and research institutions, private and public enterprises and scientific and professional associations.

NATIONAL COUNCIL ON GRADUATE EDUCATION

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Senador Ney Braga (President)

Chief Minister of the Secretariat of Planning of the Presidency of the Republic
João Paulo dos Reis Velloso (Vice-President)

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